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DYNAMICAL PRODUCTION MODEL FOR CONTROL OF THE FLEXIBLE MANUFACTURE SYSTEM WORKING

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Flexible manufacture system (FMS) included the mechatron elements industrial robots, transport units with automatic control, special manipulators with different purposes is designed and used for output many nomenclature products. The mechatron elements of FMS can be considered as complex mechanical dynamic systems which work in the connected each others zones. Their functions of synchronization and coordination at three - dimension area (3D) is supported by the control system.

In the paper it is considered creation of production model for control of FMS.

As known the production system [1] included situation → during, cause → result and by others pare forms using predicate algebra ($f \le xi$, ν_j, &, v, , → >) consists knowledge, fact (situations) bases and control bloc. At formal function of the production system can write as:

$$x(t+1) = f(x(t)), Ui(x))$$

where $U_i \in U_j$, U – the multiplex of production rules; $x(t)$ – the initial positions of the fact bases; $x(t+1)$ – the position after application of the production rule to the fact bases

In the figure 1 the structure and bloc-scheme of dynamical production system of FMS control is shown.

As see at its technical level the fact bases of FMS is formed by means of receiving the input information from the sensors of mechatron devises and changed its dynamical position after every influence. Productions received from the sensors and productions forming data and knowledge bases of FMS fact bases are done active their corresponding.

The bloc formed control signals and supported executive of solution is worked by the algorithm which is written as:

$$\forall (S_{cs} : \bigwedge_{i=1}^{n} X_i \rightarrow 1) \exists (U_j)(f(X_i) \rightarrow f(U_j)) \cdot$$

The date formula like words is understand as: "For every initial position of active elements S_{cs} adequate influence U_j exists that, by result of this influence to get an ending result the fact bases at real time regime transferred to news positions approaching the mine purpose".

The date base of FMS is created on the base of the expert knowledge of professional workers like the productions "IF….→ THEN…." and the number of this production is limited the number of sensors in the mechatron units.

By means of application of the proffered algorithm execute experiments with computer simulation on the sistemotechnical stage of designing FMS models and researching the problem of its using in the industry are supported.

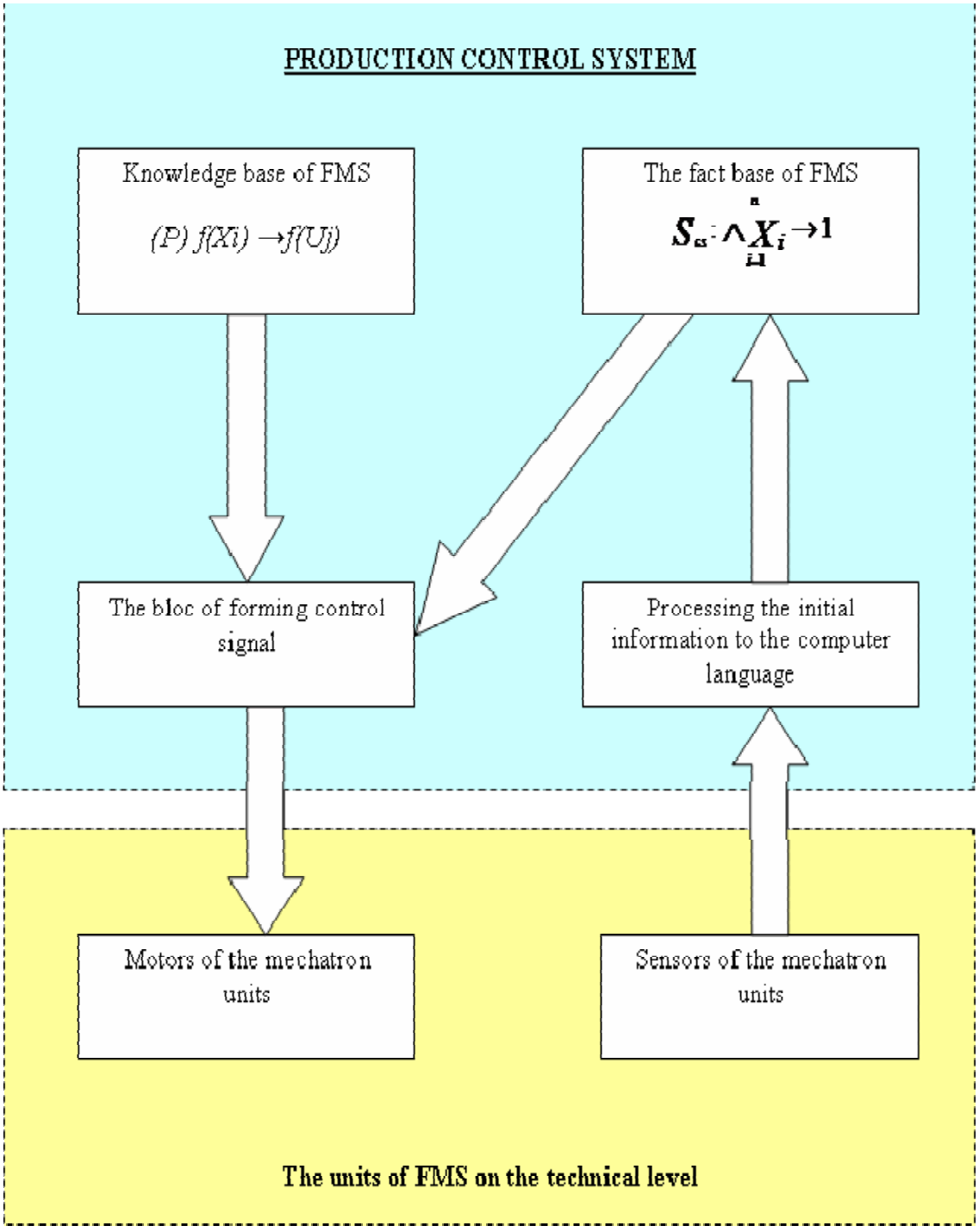

Figure 1

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